Lowell's Scenic Walkway Along the Merrimack River

2

COMMUNITY PROFILE

2.0 Community Profile

The process of developing a Master Plan is informed by research into both existing development conditions as well as projections of future demographic, construction, and fiscal impact trends. By analyzing this information, the City of Lowell can best understand and anticipate future circumstances under the existing regulatory framework and identify appropriate areas for revision in order to realize the goals and recommendations of the Master Plan.

2.1 Demographics

2.1.1 HISTORIC TRENDS

Lowell witnessed its greatest population growth from 1880 to 1900 (Table 1-1). During this period the textile mills began to prosper and new commercial and industrial enterprises appeared in the City creating an increased demand for labor. In 1875, the first influx of immigrants began to settle in the City in response to the new employment opportunities. Lowell's population increased from 59,475 in 1880 to 94,969 in 1900. Industrial production in Lowell had reached its peak by the early 1900s. Lowell's population grew steadily as immigrants continued to move into the City, gradually replacing the early "mill girls" as the major source of labor. By 1920, Lowell's population had reached a high of 112,759.

The resulting Depression and the movement of the textile industry to the South resulted in Lowell's eventual economic collapse. From 1920 to 1930, Lowell experienced its first significant loss in population, decreasing to 100,234 persons in 1930. The City's population remained stable throughout the Depression of the 1930s. Following World War II, the population began a steady decline as residents began moving to the suburbs. Lowell's population decreased 10 percent from 101,389 in 1940 to 92,107 in 1960. Table 2-1 identifies the historical population increase and decline experienced in Lowell over the past century.

Table 2-1
Population Trends (1880-2000)

Year	Population	Percent Change
2000	105,167	+ 1.7
1990	103,439	+10.7
1980	92,418	-01.9
1970	94,239	+2.3
1960	92,107	-05.3
1950	97,249	-04.1
1940	101,389	+01.1
1930	100,234	-11.1
1920	112,759	+06.0
1910	106,294	+11.9
1900	94,969	+22.2
1890	77,695	+30.6
1880	59,475	

Source: US Census Bureau

In the late 1950s, Lowell began undertaking many urban renewal projects to curtail the growing out-migration of its residents. These efforts achieved limited success. Although Lowell's population grew in 1970 to 94,239, it dropped off again in 1980 to 92,418.

2.1.2 POPULATION & DENSITY

As of 2000, the City of Lowell had a population of 105,167 and a population density of 11.9 persons per acre (p/a). Since 1970, the population has increased by 11.6 percent, which is consistent with the state growth rate of 10 percent. The greatest growth occurred between 1980 and 2000 with a 13.8 percent increase, while from 1970 to 1980 the City experienced a decrease of 1.9 percent in population.

Today, the largest percentage of the population lives in the Highlands neighborhood (17 percent); however the 10.5 p/a in the neighborhood is just below the City's density average. The greatest population densities can be found in the neighborhoods of Back Central (28 p/a), the Lower Highlands (26.37 p/a), and a portion of the Acre (36.9 p/a). The lowest population densities are located in West Pawtucketville (6.0 p/a) and South Lowell (6.3 p/a). Since 1970, Downtown and a portion of the Acre have experienced the biggest increases in density, with Downtown increasing by more than 350 percent and the Acre by 140 percent. Overall, Lowell’s neighborhoods physically portray their density levels, with more two-family and multi-family homes in highly dense areas and predominantly single-family homes on larger lots in lower density areas. Downtown has slightly higher residential density than the City overall with 15.8 p/a. This can be explained by the large amount of commercial and institutional uses in the area compared to more exclusive residential use in surrounding neighborhoods.

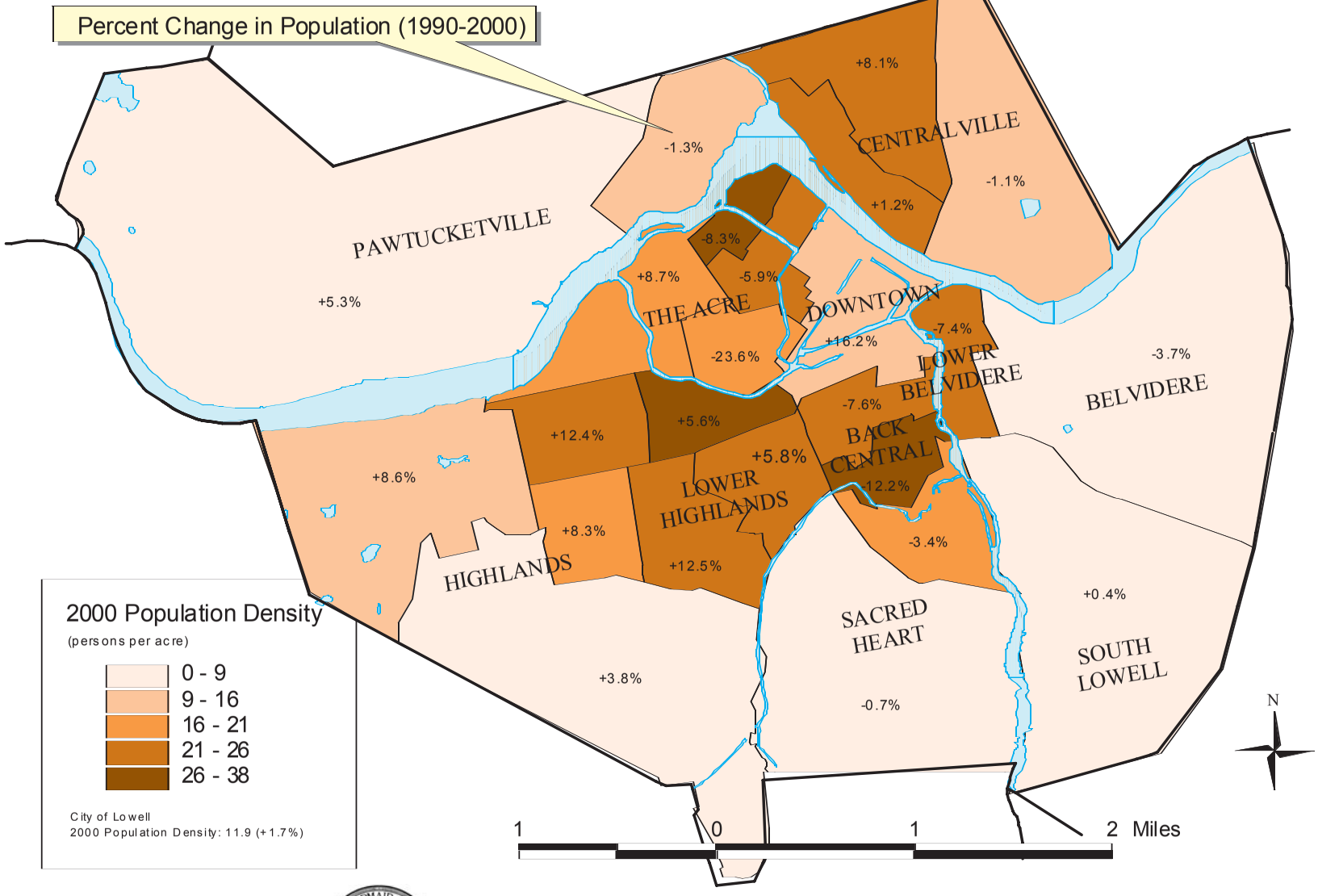
Perhaps the most significant changes within the City have occurred with the redevelopment of Downtown. Since 1970 the population and density of Downtown has more than tripled, housing almost a third of all new population in Lowell for the past 30 years. The area has contributed to the small increase of density for the City and helped to direct growth away from subdivisions of lesser density that have occurred in other communities statewide. Through a number of aggressive redevelopment plans, the City has successfully improved the area with the increase of residential use. Continuing residential development within Downtown will help to relieve growth pressures in other neighborhoods and ensure a vibrant center.

Population projections, prepared by the Massachusetts Institute for Social and Economic Research (MISER), predict a 13 percent increase of the total population to 119,627 in 2010. If current trends continue, much of this growth will occur in neighborhoods such as Downtown, Pawtucketville, and the Highlands.

2.1.3 MORTALITY, FERTILITY & MIGRATION

In a fertility rate chart, provided by MISER, Lowell's birth rate for mothers in their teens to early 20s is higher than the state average, and the rate for mothers in their early 30s to late 40s are lower than the state norms. From 1980 to 1990, teen birth rates in Lowell (.070 per thousand persons) were double the state average (.035 per thousand persons). Fertility rates were similar from 1991 to 1995, however there was a slight decrease in early 20s pregnancies and a slight increase in birth rates for early 30s to late 40s. The statistics prove citywide fertility rates overall are slightly higher than state averages.

Mortality rates, provided by the same source, show that the City follows state averages for mortality rates by age, with a slightly higher mortality rate overall. This statistic combined with higher fertility rates and an average migration rate, shows that Lowell experiences average population growth each year. The city's population growth can be attributed to the large population in the prime child-bearing age range. The age group is healthy and experiences a low mortality rate creating a stable population group for annual growth.



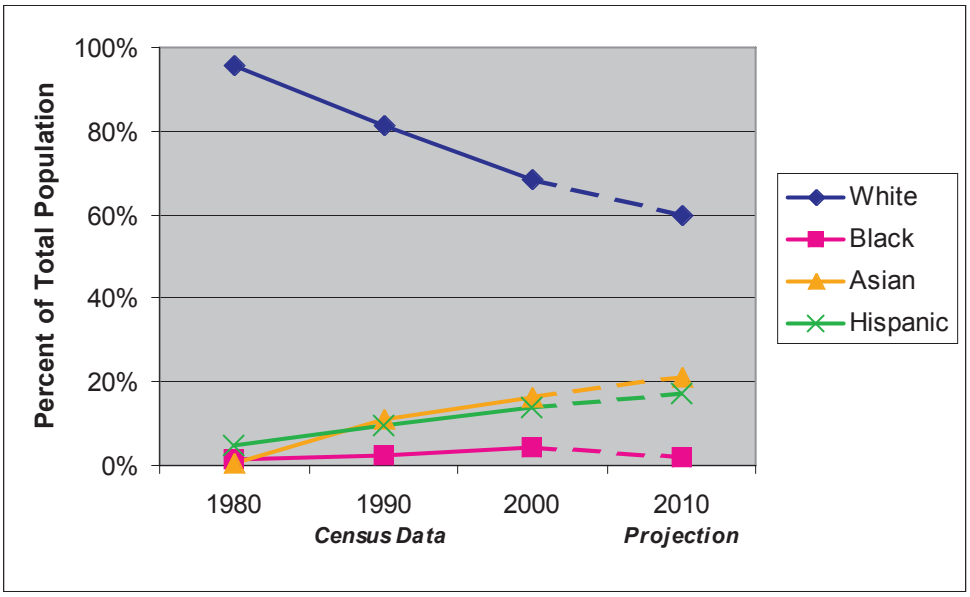
2000 Population Density

LOWELL COMPREHENSIVE PLAN

May 2003

2.1.4 RACE & MINORITY TRENDS

Figure 2-1
City of Lowell: Race & Ethnicity Trends



Source: US Census Bureau, MISER-UMass Amherst

The most significant recent changes in the City's population have been in the racial and ethnic composition of the population. In the past 30 years, minority populations have increased from 4.1 percent to 31.4 percent of the total population with an increase of 400 percent since 1980. All races have experienced substantial growth except White populations, which decreased by 18.5 percent since 1980. Increasing populations since 1980 include Black (+367 percent), Other (+558 percent), Hispanic (+321 percent), and the largest increase, Asian (+2,876 percent).

The dramatic increase in the Asian populations, primarily from Cambodia and other Southeast Asian nations, occurred between 1980 and 2000. Although Asian populations have grown throughout the city, the increases are most pronounced in the Lower Highlands and a portion of the Acre that is adjacent to the Lower Highlands. Today, 35-50 percent of the residents in these areas are of Asian descent and formulate a distinct community in Lowell. Smaller Asian populations inhabit 10-30 percent of Back Central, the Highlands, Pawtucketville, Centralville, and Downtown. Belvidere and South Lowell have the smallest Asian populations that range from 2-5 percent. MISER projects that the Asian populations will increase by 43 percent to 24,926 in 2010, 21 percent of the projected population. The growing Asian population has and will continue to change the composition of Lowell and diversify the community with new culture and traditions.

Similar to national trends, Hispanic populations are growing considerably in the City. Various neighborhoods house high Hispanic populations, including Downtown (32.2 percent), portions of the Acre closest to Downtown (46.9 percent), and Lower Belvidere (31.9 percent). The Highlands and Pawtucketville have the lowest Hispanic populations ranging from 3-7.5 percent, while the remaining neighborhoods house 10-25 percent. Hispanic populations are projected to increase by 40 percent to 20,686 in 2010, 17 percent of the projected population.

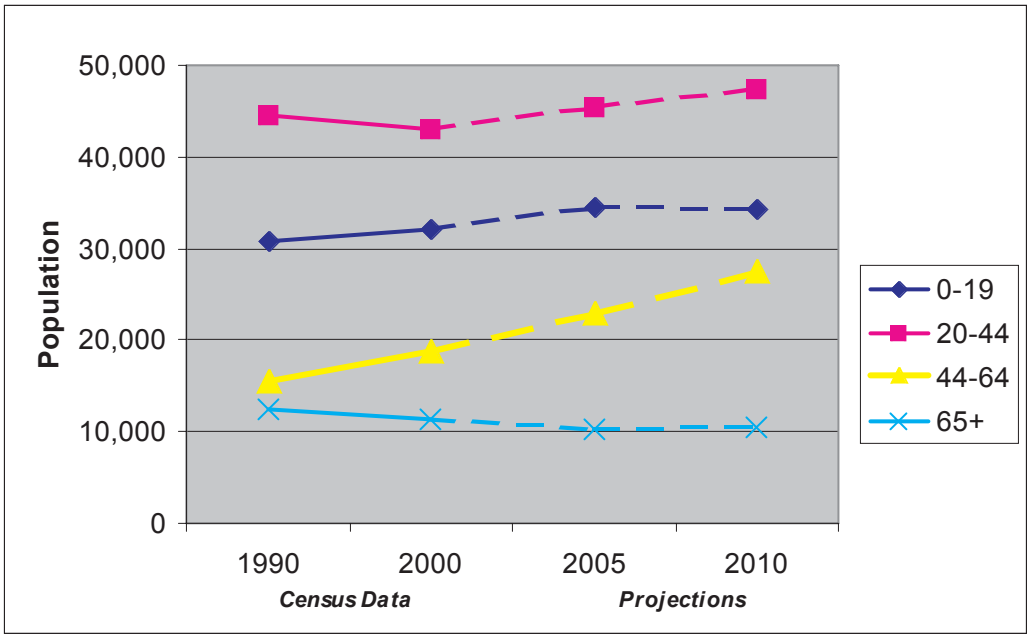
Black populations are slightly increasing throughout the City, with the lowest percentage in Belvidere (1.3 percent) and highest percentage in Downtown (10.9 percent). Projected populations show little significant change from previous growth rates.

The City's White population, the only group with decreasing population, remains the major racial group in Lowell (68.6 percent). Neighborhoods that showed the largest decrease, the Acre, Lower Highlands, and Back Central, are the same neighborhoods that have increasing minority populations. Areas that still contain large White majorities include Christian Hill (84.3 percent), Pawtucketville (82 percent), South Lowell (88.6 percent), and Belvidere (89 percent). Population projections for 2010 show a decrease of 1.3 percent to 71,212, lowering the White population to 60 percent of the total population.

Based on extrapolation of school enrollment, immigration data, and other factors it is widely presumed that Lowell's minority populations may have been undercounted by the census; the degree of the undercount may or may not be significant.

2.1.5 AGE

Figure 2-2
City of Lowell: Population by Age

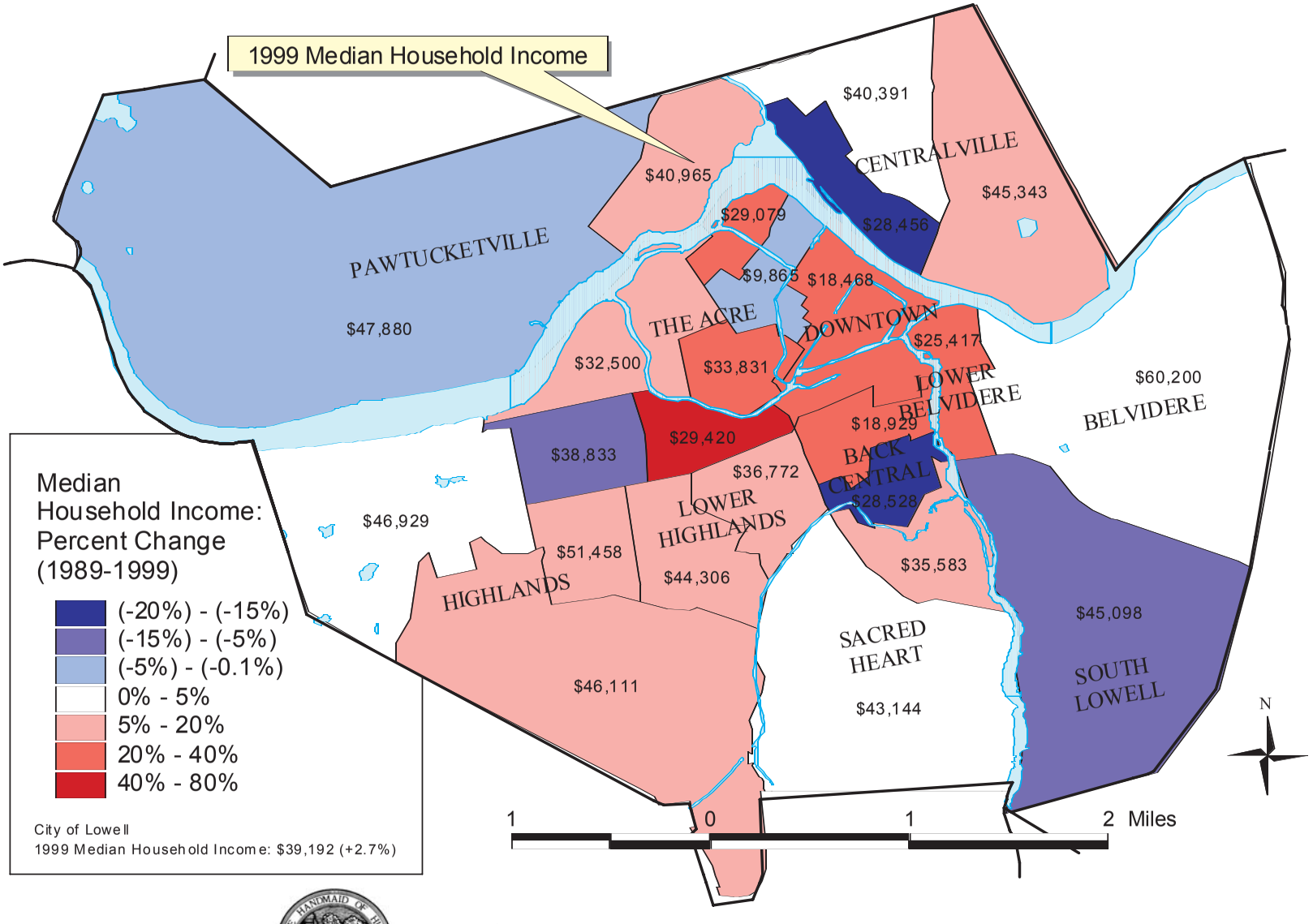


Source: US Census Bureau, MISER-UMass Amherst

Only one age group has experienced significant change within the City during the past 30 years. Since 1970 the 24-44 age group has tripled while additional age groups have remained relatively stable. Due in part to immigration in the 1980s, the 24-44 age group flourished citywide with significant increases in every neighborhood. Data provided by MISER includes age and sex pyramids from 1990 that show the City's 20-34 age group for both males and females surpassed the state average. Population projections provided by MISER anticipate a significant population increase in the 45-64 age group, as this population cohort ages. Projections also indicate that the 24-44 age group will experience its smallest population increase since 1970 over the coming decades.

2.1.6 INCOME TRENDS

In the 1970s, citywide median household incomes declined in every neighborhood with most severe cases in portions of the Acre (-54.9 percent), Lower Belvidere (-42.7 percent), and Centralville (-37.3 percent). Between 1970 and 1980 the City's overall median household income fell from $44,627 to $36,038 (in 1999 dollars). Only one area in the Highlands had a slight increase of 3.7 percent.



Median Household Income Trends

LOWELL COMPREHENSIVE PLAN

May 2003

Source: US Census Bureau

In the 1980s, median incomes varied throughout the neighborhoods and the City's overall adjusted median income increased by 5.9 percent ($38,156). Neighborhoods that continued to experience declining incomes included the Acre, the Lower Highlands, and Back Central. Centralville experienced the biggest increase in median household income by roughly 35 percent, along with neighboring Christian Hill (+17.9 percent). Other areas to progress include South Lowell and Sacred Heart.

From 1989-1999, the City's median income increased by 2.7 percent to $39,192, and the majority of Lowell's neighborhoods reflected this trend with less than one-third of the census tracts experiencing a decrease. Unlike the previous decade, the Lower Highlands neighborhood experienced a 71 percent increase in its median income, as did a portion of the Acre, which had an increase of 36 percent.

2.1.7 CLUSTERS OF PUBLIC OPINION

In addition to the demographic analysis of Lowell's population, it is important to recognize that there are distinct clusters of public opinion that do not always follow particular ethnic, racial, age, or other demographic patterns. Public opinion research conducted by DPA identified five major segments of Lowell's population with generally like-minded attitudes about the community. They are referenced within this Master Plan and its supporting documents and are summarized on page 20 (Table 2-2).

Table 2-2
Cluster Descriptions

Diverse Blue-Collar Families 14% of Households	Least likely to have lived in Lowell entire life Least likely to live in "upscale" neighborhoods Least likely to live in single family home Most likely to live in apartment or duplex Most likely to rent Largest households Most likely to have children Most likely to have children enrolled in Lowell Public Schools Least likely to be Caucasian Most likely to be Asian or Hispanic Most likely to be employed in a blue collar job Least likely to have gone to college Most likely to have income less than $30,000 Most likely to not know what neighborhood they live in
Upwardly-Mobile Inner-City Residents 21% of Households	Least likely to be newcomers to Lowell Most likely to live in "more urban" neighborhoods More likely to rent Directionally more Hispanics Youngest group Less likely to be a college graduate or to have high income Higher income/education than segment 1 Less likely to work in blue collar job than segment 1
New Residents 15%t of Households	Most likely to be new to Lowell Most likely to be of "new homesteading" age (26-35) Least likely to be elderly
Long Timers 29% of Households	Most likely to have lived in Lowell for their entire lives Likely to own a single family home Least likely to have children in home Likely to be Caucasian Most likely to be over 65 Least likely to have income under $30,000
Upscale Residents 21% of Households	Most likely to live in Pawtucketville or Lowell's "upscale neighborhoods" Least likely to live in "more urban" neighborhoods Likely to own a single family home Smallest household size Least likely to have their children enrolled in Lowell Public Schools Likely to be Caucasian Highest education Highest income

Source: Davidson-Peterson Associates

2.2 Housing

The 2000 Census documented 39,468 year-round housing units in the City of Lowell. Of these, 1,581 or four percent were vacant, and 43 percent of Lowell's housing units are owner occupied. This represents a decline in the total number of housing units since 1990 but a slight increase in the number of occupied units. The majority of owner occupied housing is located in the higher income, low minority Census Tracts. A majority of the rental occupied homes are found in the lower income, high minority concentrated Census Tracts. The factors common to the areas with low homeownership rate are

- Lack of single-family and small multi-family (1-4 units) structures
- Concentration of larger multi-family (5-150 units) structures
- Concentration of subsidized housing
- The high concentration of business, industrial and multi-family zoning districts

Household incomes have failed to keep pace with the increases in housing costs in the Lowell area, causing a decrease in housing affordability. These trends reflect those in the Commonwealth as a whole. The lack of affordable housing options is particularly detrimental to those families with low and moderate incomes, but is no longer exclusive to these populations.

Table 2-3
Median Housing Sales Price

Year	Months	1-Family	Condo	All Sales
2002	Jan - Dec	193,000	129,000	179,000
2001	Jan - Dec	168,500	104,900	150,000
2000	Jan - Dec	142,000	85,000	125,000
1999	Jan - Dec	124,000	68,828	105,000
1998	Jan - Dec	110,000	56,000	92,950
1997	Jan - Dec	89,000	43,000	73,000
1996	Jan - Dec	85,000	36,000	63,000
1995	Jan - Dec	80,000	34,000	55,000
1994	Jan - Dec	78,250	27,800	47,000
1993	Jan - Dec	77,650	25,800	50,000
1992	Jan - Dec	85,000	38,175	65,000
1991	Jan - Dec	98,125	51,900	82,500
1990	Jan - Dec	110,000	85,500	106,000
1989	Jan - Dec	125,000	99,900	115,000
1988	Jan - Dec	126,750	94,000	115,000

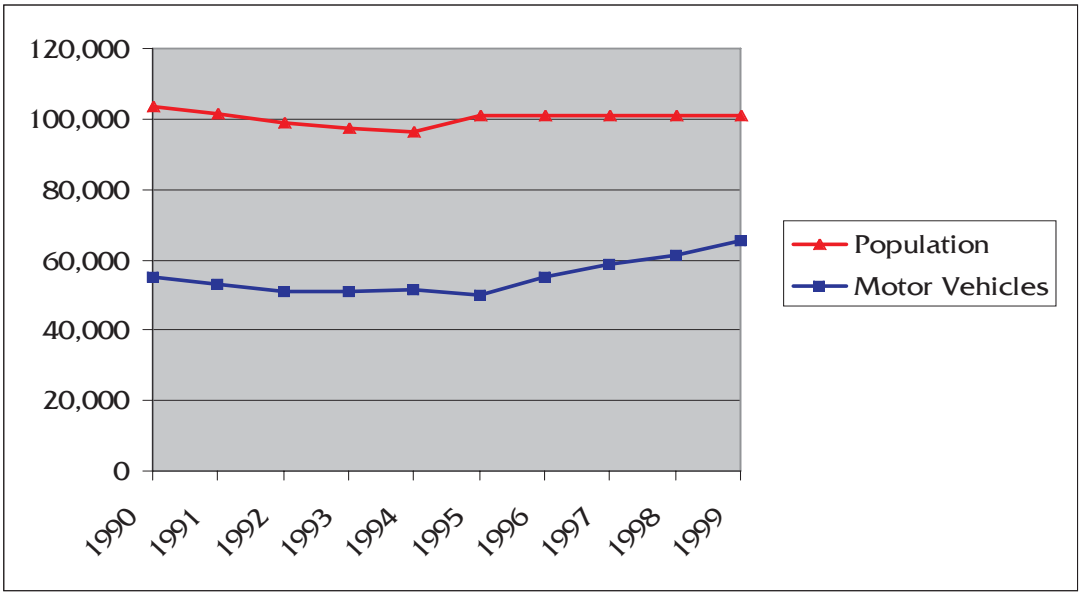
Source: The Warren Group

2.3 Transportation

The City of Lowell is fortunate to be served by an excellent regional highway system that provides direct access to the Boston metropolitan area as well as points to the west and north. Route 3, I-495 and I-93 are just minutes from downtown Lowell via the Lowell Connector. Boston is just 45 minutes by car; Route 128, 12 minutes. In addition, the coastal beaches of the north shore are less than 45 minutes away, and the prime New Hampshire skiing and hiking areas can be reached in 60 minutes.

This excellent transportation system translates into more jobs and services as companies move into the region to take advantage of the transportation networks, available development parcels, and excellent labor force. While much of this development occurs in the surrounding suburbs, the City has still felt an impact through housing and commercial construction, and increased traffic. This increased population has resulted in growing pressures on existing transportation infrastructure and parking resources, as well as the quality of life in Lowell's established neighborhoods. The widening of Route 3 and the New Hampshire portion of I-93 can be expected to significantly increase development and its impacts on the region as a whole as well as traffic and related pressures on the Lowell's neighborhoods and transportation infrastructure.

Figure 2-3
Number of Registered Motor Vehicles and Population Growth (1990-1999)



Source: US Census Bureau and the MA Dept.. of Revenue

The Lowell community is well served by a clean, modern and efficient public transportation system. This system includes local and regional bus routes, passenger commuter trains, inter-city bus shuttles, airport limousine service and a modern multi modal transportation facility at the Gallagher Terminal. Regional growth patterns, which include greater diffusion of housing and employment locations, complicate efforts to continue to expand and improve public transportation usage.

Commuter trains provide convenient 45-minute travel service between Lowell and Boston's North Station with 21 trips per day. A 12-minute shuttle connects the Gallagher Transportation Terminal with the Lowell Business District. These trains also provide direct access to North Billerica, Wilmington, Woburn (and the Logan Airport Express Bus), Winchester, and Medford before arriving in Boston. In addition, 16 bus lines serve the City and the surrounding suburbs during daytime hours. Public transportation options are more limited during evening and nighttime periods.

For those who do not have direct access to the Lowell Regional Transit Authority (LRTA) bus routes, the LRTA provides low cost parking at the Gallagher Terminal, which will also house a new bus transportation center that will be relocated from downtown.

2.4 Economic and Workforce Development

Lowell's economy is characterized by a growing and diversifying employment base. Once solely dependent on the textile industry, the City has expanded its employment opportunities to include electronics, research and development, education, health care, software development, as well as an emerging service industry.

Over the past 25 years, Lowell has experienced significant economic benefits from a broadening of its understanding of economic development. Historic preservation, cultural development, tourism, and the construction of significant athletic and entertainment venues have contributed to Lowell's economic rebirth and transformation from a narrow manufacturing base to today's more complex economy.

Changing regional development patterns have also impacted Lowell's economy as the proportion of the region's employment located in the suburban communities has increased in recent decades. Once the center of employment for the region, Lowell is increasingly becoming a bedroom community for residents who commute to office and industrial areas in surrounding towns as well as Greater Boston.

According to the Massachusetts Division of Employment and Training, Lowell's unemployment rate decreased steadily during the 1990s, reflecting the statewide economic trends. More recently, the area has been hit with job losses as a result of a major downturn of the e-commerce and computer industries. Lowell's unemployment rate is currently higher than the Northern Middlesex SDA (Service Delivery Area) and the Commonwealth as a whole. However, a greater sector diversity has minimized the impact of this downturn relative to the 1989-90 recession and loss of Wang Industries as the City's dominant employer.

Table 2-4
Lowell: A Bedroom Community

Year	Lowell Residents Holding Jobs	Total Employment within Lowell	Residents Employed Outside Lowell (Bedroom Effect)
2001	51,306	28,489	22,817
2000	49,403	34,694	14,709
1999	48,626	33,555	15,071
1998	47,830	32,904	14,926
1997	47,068	32,046	15,022
1996	45,093	30,801	14,292
1995	44,083	31,534	12,549
1994	41,956	32,385	9,571

Source: Massachusetts Division of Employment & Training

2.5 Development Regulation

Lowell regulates development through a number of established codes and ordinances. These include zoning, subdivision control, site plan review, wetlands protection, flood plain development regulation, and historic preservation design review in certain areas.

2.5.1 ZONING REGULATION

Zoning ordinances are written to guide future development in order to protect the health, safety, and welfare within a community, preserve community character, prevent undesirable development, and maintain property values. Zoning is one of the primary tools for implementing a community's comprehensive master plan for land use. In Massachusetts, all zoning ordinances must conform to the requirements of Chapter 40A of the General Laws, the Zoning Act, adopted in 1975. Zoning proscribes what types of land use activities may occur in which portions of the City and establishes minimum requirements for developments, including minimum lot dimensions and off-street parking requirements.

Under the current zoning ordinance the City of Lowell is divided into seven residential districts, four commercial districts, one mixed use residential/commercial district, four industrial districts, and two project-specific planned development districts.

Table 2-5
City of Lowell Existing Zoning Districts

Residential Districts	S1	Single Family Dwellings
	S2	Single Family Dwellings
	TF	Two-Family Dwellings
	UM2	Urban Multifamily
	SM2	Suburban Multifamily
	M3	Multifamily Dwellings
	M4	Acre Urban Residential
Commercial Districts	B1	Local Business
	B2	Limited Business
	B2A	Intermediate Business
	B3	General Business
	B4	Mixed Retail/Residential or Office/Residential
Industrial Districts	IA	Warehousing, Storage and Light Manufacturing
	IB	Heavy Industry
	IP	Industrial Parks
	IPHR	Industrial Park High Rise
Planned Development Districts	PDMI	Planned Development Medical/Institutional
	PDMU	Planned Development Mixed Use

Lowell's current zoning ordinance was originally adopted in 1966. This ordinance and zoning map replaced the City's limited zoning regulations that had been in place since 1926. These early ordinances had essentially served to solidify the then existing growth patterns of the City with a dense core of industrial, commercial, and multifamily residential land uses surrounded by low-density residential and limited commercial development in the City's outlying areas. The 1966 ordinance broadened the scope of regulation and provided tighter requirements for developments. However, it was enacted without the guidance of a comprehensive land use plan and continued to reinforce Lowell's existing land use patterns.

In 1972, the Lowell City Development Authority completed a comprehensive land use plan, which included recommendations for zoning changes. These were not adopted, and the 1966 zoning code remains the basic framework for Lowell's zoning today. There have been a number of amendments to the zoning ordinance since 1966. These include the addition of a sign code, floodplain and wetlands regulations, and several planned development models that may be followed for specific types of developments. In 1978, the City responded to new requirements of the Massachusetts Zoning Act and clarified the procedural language governing the actions of the Zoning Board of Appeals in granting variances and special permits. In 1986, comprehensive changes were made to the Zoning Code in response to concerns about overdevelopment. These changes increased dimensional and parking requirements for residential building lots and added new open space and yard area requirements for multifamily residential development.

With the exception of the changes noted above, most amendments to the City's zoning ordinance have been made on an ad hoc basis to respond to particular circumstances ranging from urban redevelopment plans to significant economic development opportunities. To date, the City of Lowell has never enjoyed the guidance of a comprehensive master plan in crafting a zoning ordinance. As a result the City's building activity has ranged from weakly-regulated free-market development of open or under-developed land in some areas to wholesale disinvestment in other areas where dimensional requirements render the majority of existing lots nonconforming and therefore nonbuildable when they become vacant.

Figure 2-4
New Residential Development in Lowell

Approximately 96 percent of the City's land area is either already developed or protected from development for conservation or recreational purposes. Furthermore, many of the existing buildings in Lowell were constructed before any zoning was in place and others have been "grandfathered" as existing nonconforming structures when dimensional requirements have been increased. With so many existing nonconformities and little open land remaining for development, zoning in Lowell must be considered in different terms than in a developing suburban or rural area. In an existing urban setting, zoning regulations are a weak tool to limit density or rapidly change land use patterns. Instead, well-crafted zoning can enable the City to stimulate redevelopment in a manner consistent with planning goals, protect existing neighborhood character, and encourage appropriate economic development in targeted areas.

2.5.2 SUBDIVISION REGULATIONS

Consistent with the authority granted in Massachusetts General Law Chapter 41, Section 81A-81GG, the regulations governing the subdivision of land in the City of Lowell were adopted in 1970 by vote of the Lowell Planning Board. With the exception of minor amendments and administrative clarifications, these regulations have changed little since their original enactment. Consistent with the Planning Board's mandate, the stated purpose of subdivision regulations is to protect the health, safety, and welfare of the inhabitants of Lowell by regulating and establishing standards for public ways and other public works that serve subdivisions. These regulations are designed to insure that minimum quality standards are met for new infrastructure through public hearings before the Planning Board and technical staff review of subdivision proposals. The subdivision regulations outline minimum standards and have been partially waived during the approval process for most development proposals.

Since the total land in Lowell remaining for potential subdivision that is subject to these regulations is less than 400 acres, these regulations will have little impact on the continued development of the City. Nevertheless, the design standards should be updated to better reflect current construction and engineering methods.

2.5.3 SITE PLAN REVIEW

In 1987, the Lowell Zoning Code was amended to grant Site Plan Review authority to the Lowell Planning Board. Under the current site plan ordinance, all projects which include the construction and development of any building or buildings either exceeding 10,000 square feet of nonresidential gross building area or exceeding six residential dwelling units are subject to site plan review and approval by the Planning Board before a building permit can be issued. Self-service gas stations also require site plan approval. The stated purpose of the ordinance is to protect and promote the health, safety, convenience, and general welfare of the inhabitants of the City and to promote acceptable site planning practices Lowell. The ordinance allows the Planning Board to review each project to insure that it satisfies a number of designated criteria. Under existing Massachusetts law, the Board may approve projects or approve them with conditions that must be satisfied. In Massachusetts, Planning Boards do not have the authority to reject development proposals outright during the site plan review process.

In an urban environment, where most new developments are located in or near existing residential areas, site plan review is one of the most important tools for the ongoing regulation of land development and implementation of the goals of the comprehensive master plan. Consistent with this observation, the site plan review authority of the Planning Board should be expanded so that a greater percentage of non-residential projects as well as smaller multifamily residential projects receive the scrutiny of the Board. Further, consistency with architectural context and existing neighborhood character should be added to the established review criteria and submission requirements.

In addition, it is recommended that the City of Lowell reform the special permit granting process so large projects that require site plan review can also obtain special use permits from the Planning Board at a single public hearing. At the same time, certain special permits required for activities which are minimally intrusive on the neighborhood might be granted after staff review and notice to a smaller pool of more proximate abutters than is presently required.

2.5.4 WETLANDS PROTECTION

Consistent with the authority granted in Massachusetts General Law Chapter 131, Section 40, the City of Lowell Conservation Commission administers the Massachusetts Wetlands Protection Act. The Conservation Commission also administers the City of Lowell Wetlands Ordinance, which was adopted in June 1971. The purpose of the Wetlands Protection Act and the Lowell Wetlands Ordinance is to protect the wetlands, related water resources, and adjoining land areas in the City by controlling activities deemed to have significant effect upon wetland values, including but not limited to the following: public

or private water supply, groundwater, flood control, erosion and sedimentation control, storm drainage prevention, fisheries, recreation, agriculture, aquaculture, and historic values.

Except as permitted by the Conservation Commission or as provided in the ordinance, no person shall remove, fill, dredge, alter or build upon or within 100 feet of any bank; upon or within 100 feet of any lake, river, pond, stream; upon or within any land under said waters; or upon any land subject to flooding or inundation by groundwater or surface water.

Due to the limited amount of developable space in Lowell more and more projects are coming under the jurisdiction of the Conservation Commission. It is vital to protect wetlands and their associated resources for flood storage capacity as well as their natural beauty.

2.5.5 FLOOD PLAIN DEVELOPMENT REGULATION

In association with the Building Commissioner, the Lowell Conservation Commission is charged with enforcing flood plain development. All subdivision proposals and proposed new developments are reviewed to determine whether such proposals will be reasonably safe from flooding. If a proposal is in a flood prone area, any such proposal shall be reviewed to assure that all proposals are consistent with the need to minimize flood damage within the flood prone area and that all public utilities and facilities such as sewer, gas electrical, and water systems are located and constructed to minimize or eliminate flood damage. Also adequate drainage is to be provided to reduce the exposure to flood hazards.

2.5.6 LOWELL HISTORIC BOARD

The Lowell Historic Board (LHB) and the Downtown Lowell Historic District were created by a special act of the Massachusetts Legislature (Lowell Historic District Act, Chapter 566, Acts of 1983) to promote the educational, cultural, economic, and general welfare of the public through the preservation, protection, and enhancement of Lowell's unique historic resources. Strengthening and expanding historic preservation review and regulations in Lowell was a requirement of the federal law creating the Lowell National Historical Park (P.L. 95-290) in order to insure community actions would not be inconsistent with the preservation goals of the Park.

Two review districts currently exist in Lowell. Within the Downtown Lowell Historic District, the erection, demolition, or alteration of any exterior feature (and interior when work affects the exterior appearance) of a building, structure, or parcel requires the approval of the LHB. By state law, no City department, board, or commission can issue any permit, variance, or approvals within the district until the LHB has first granted its approval. The Board's design review standards assist in guiding all construction, preservation, restoration, and alteration of all properties in the district so that the integrity of Lowell's nineteenth century setting is not disrupted. The LHB plays a similar role in the Acre Neighborhood District, a design review district established pursuant to the Board's special act that was created in 1999 as part of the Acre Urban Revitalization and Development Plan.

Figure 2-5
Tyler Park Historic District

Table 2-6
Land Use Pattern Comparisons

	City of Lowell		City of Lawrence		City of New Bedford		City of Springfield		City of Worcester	
Land Use	**Acres**	**Percent**	**Acres**	**Percent**	**Acres**	**Percent**	**Acres**	**Percent**	**Acres**	**Percent**
Recreation	312.00	4.3%	141.88	3.5%	567.08	6.8%	693.68	4.4%	1,046.87	5.8%
Residential	4,513.97	62.4%	2,242.12	55.6%	4,313.15	51.5%	9,955.26	63.2%	10,659.67	59.0%
Commercial	514.22	7.1%	425.60	10.6%	627.99	7.5%	1,265.20	8.0%	1,521.73	8.4%
Industrial	802.83	11.1%	689.40	17.1%	980.78	11.7%	1,450.34	9.2%	1,778.02	9.8%
Urban Open	733.63	10.1%	370.22	9.2%	818.88	9.8%	1,591.96	10.1%	1,904.94	10.5%
Transportation	317.23	4.4%	160.81	4.0%	954.61	11.4%	748.09	4.7%	1,031.26	5.7%
Waste Disposal	43.19	0.6%	4.07	0.1%	115.06	1.4%	50.61	0.3%	125.04	0.7%
Total Acres Developed	7,237.07	100.0%	4,034.09	100.0%	8,377.55	100.0%	15,755.15	100.0%	18,067.53	100.0%
Total Percent Developed		77.8%		90.2%		64.9%		74.4%		73.5%

Source: Mass GIS

Other historic districts listed on the National and State Registers of Historic Places exist throughout the City but are primarily honorary in nature and in no way limit the use or alteration of properties unless federal or state action is involved. In these cases, the LHB serves as the local entity representing the Massachusetts Historical Commission and the Advisory Council for Historic Preservation, assisting in the review of all federal and state assisted City projects citywide for their impacts on historic resources.

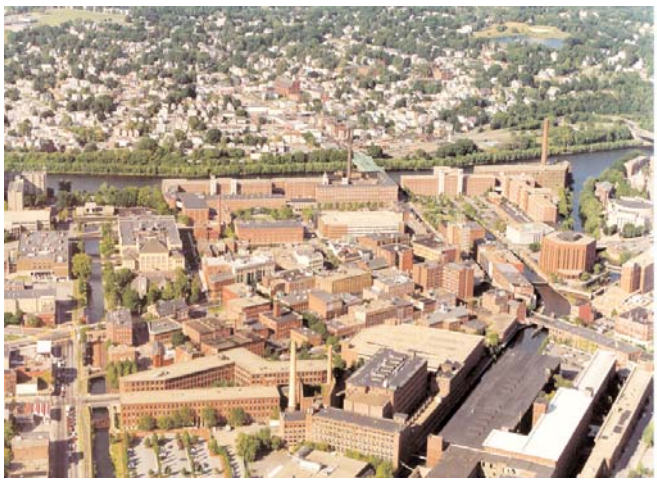
2.6 Land Use Inventory

During the summer and fall of 2001, DPD staff conducted a building-by-building inventory of land uses in Lowell. The existing buildings theme in the City's GIS was used as a guide to conduct field inspections throughout Lowell. Each property was visually inspected to determine what use or mix of uses the structure housed. The corresponding building footprint was then shaded a specified color, indicating its use. The use categories identified were:

- Single Family Residential
- Two Family Residential
- Multi-Family Residential
- Mixed Residential/Commercial
- Office
- Retail
- Mixed Office/Retail
- Industrial
- Automotive
- Institutional
- Open Space
- Vacant

In addition, the survey provided an opportunity to update the layer by adding recently constructed buildings, and removing demolished buildings. Working from these maps, DPD staff then entered the land use data into the building layer, creating a new field and entering a code for each of the land uses.

Figure 2-6
Overlooking Lowell's Historic Downtown



Lowell's land use patterns were largely set during its development as a major manufacturing center and as the commercial center for its metropolitan area. The City's major waterways, including the Merrimack River, the Concord River, and the canal system, are lined with mill buildings. While some of these buildings remain in industrial use, many have been converted to residential, institutional, or commercial uses and others remain vacant or under-occupied.

Lowell's commercial downtown, featuring institutional and residential uses and substantial storefront and office space as well as retail uses, is centered along Merrimack and Central Streets and the confluence of the Merrimack and Concord Rivers.

The neighborhoods in close proximity to these mills, the downtown, and their connecting arterial roads are relatively dense. These inner-city neighborhoods include the Acre, Back Central, Centralville, the Lower Highlands, Lower Belvidere, and Sacred Heart. Commercial nodes are located along these roads, typically at intersections or near bridges. Commercial nodes, and the dense multifamily districts which surround them, are home to most of Lowell's troubled and abandoned buildings, primarily multifamily houses, and mixed residential/retail buildings. Most sections of the older neighborhoods have maintained their human-scale, pedestrian-oriented character. Many of these neighborhoods have also experienced significant reinvestment in recent years from both private and public sources.

The density of residential uses generally declines as the distance from commercial nodes and mill buildings increases. The Belvidere, Upper Highlands, and Pawtucketville neighborhoods in particular are comprised primarily of single-family homes on larger lots than those found in the inner-city neighborhoods. These neighborhoods, especially Pawtucketville, are also home to the majority of the City's remaining undeveloped land, and therefore are subject to more suburban development pressures than the inner-city areas.

The development of large-scale highway projects in the second half of the 20th century imposed a different order on the City. Highways skirt the City's southern, eastern, and western boundaries. In these areas, large scale commercial, industrial, and multifamily residential uses predominate. Arterials into the City feature large-scale commercial and automotive uses, laid out with deep setbacks, large parking lots, and little mixing of uses within a walkable distance.

The Lowell Connector runs from the middle of the City's southern border into the geographic center of the Lowell. This project led to the creation of automobile oriented development, of the kind typically found near the City's border, adjacent to the Highlands and Sacred Heart neighborhoods. Arterial roads with access to the Connector, and newer industrial and office park roads, have been the primary recipients of this development.

Large institutions including UMass Lowell, Middlesex Community College, Lowell General Hospital, and the Saints Memorial Medical Center have also had a significant impact on the land use patterns in the immediate areas. Each has a sizable campus of its own and each has promoted related accessory land uses in its immediate surroundings ranging from off-campus student housing to medical offices and specialty retail.

Urban Renewal projects from the mid-20th century have also significantly changed land use patterns in the central business district, particularly in areas adjacent to the downtown. Urban renewal areas from this period, which include the residential Northern Canal area around Father Morissette Boulevard and the Hale-Howard industrial area, are characterized by extensive single use development and the replacement of many small neighborhood streets and blocks with a few large arterials and superblocks, improving vehicular traffic capacity but also resulting in less pedestrian activity and a psychological and physical separation of these areas from the rest of the City.

2.7 Comparative Land Use Analysis

Utilizing land use data compiled for all communities in the Commonwealth of Massachusetts by MassGIS, Division of Planning and Development staff compared land use patterns in Lowell with those in comparable cities as well as its neighboring towns. While there are clear limitations to the data used, these limitations apply to all communities and reasonable comparisons can be drawn. Not surprisingly, the relative proportion of developed land to undeveloped land in the towns (approximately 50 percent) was significantly lower than in Lowell (77.8 percent). However, as the table below illustrates, Lowell's land-use patterns are generally similar to those of comparable cities.

2.8 Zoning and Land Use

Lowell's present zoning was established in large part to preserve existing patterns of development when it was enacted in the 1960s. This has generally created circumstances in which today's land use patterns are consistent with the underlying zoning intent. There are some exceptions to this rule, however. Left unchecked, the inconsistencies between zoning and intent can encourage development contrary to the goals of the master plan. The following are some of the most prominent conflicts between land use patterns and the underlying zoning, and the impact of these inconsistencies on land use patterns:

- Due in part to the obsolescence of these areas for contemporary industrial users, vacancies and non-industrial uses have encroached significantly on many of Lowell's industrial zones, including along the Concord River, Pawtucket Canal, and the western end of the Merrimack River, as well as in the Sacred Heart neighborhood near Gorham Street. Without a clear vision for these areas, they could create future conflicts for industrial or residential property owners.
- The industrially zoned land located southwest of Route 3 does not contain any industrial users, due to access and environmental issues, as well as the residential character of neighboring areas in Chelmsford. If this land is to be developed, either the zoning needs to be changed or the access issues must be addressed.
- The Limited Business (B2) district along Pawtucket Boulevard has seen very little commercial development, due in part to the impact of flood plain development regulations on the auto-oriented retail development models encouraged by this zoning.
- The South Lowell neighborhood contains several areas between Woburn, Lawrence, and Boylston Streets where large numbers of existing multifamily and two-family residential uses conflict with the underlying two-family and single-family zoning, respectively. If the City of Lowell wishes to continue this pattern of development, then zoning should reflect the underlying land use pattern.
- The business districts along Chelmsford and Gorham Streets are zoned as linear districts, yet the retail users tend to concentrate near particular higher-traffic intersections while the connecting areas retain their historic residential uses. These districts could be reconfigured as nodal business districts with residential zoning in areas between the business nodes.
- There is a general citywide trend where two-family and multifamily districts are characterized by large numbers of single-family and two-family uses. This encourages redevelopment of these areas into higher-density developments that are inconsistent with the character of the surrounding neighborhood homes. In some areas, this pattern may want to be better protected by down-zoning these areas to a zoning level that is more consistent with existing development patterns.

2.9 Zoning Relief

The City of Lowell's Division of Planning and Development staff has analyzed recent activity of the Zoning Board of Appeals (ZBA). Generally, variances and special permits are requested and granted in reasonable proportions, fueled in large part by the number of grandfathered nonconforming lots and buildings that were established prior to the adoption of the present zoning. However, certain variance requests have been requested and granted in disproportionate quantities that suggest a need for reconsideration of some zoning regulations. These include:

- The design review process that is presently in place for signage that requires a special permit should be codified and formalized.
- Front yard setback variances are requested and granted frequently when the proposed project is consistent with pre-existing nonconforming setbacks of neighboring properties and/or when the relief applies only to front porches.
- Side yard setback variances are requested and granted frequently when the proposed project merely extends an existing nonconformity (i.e., if a rear addition is added whose side wall extends an existing side wall that is too close to a property line).

2.10 Build-Out Analysis

An important exercise in the master planning process is the build-out analysis. This is a theoretical exercise to estimate the future development potential in a City. This exercise assumes that the existing land use regulations and policies remain in effect for the life of the plan and provides a view of what the implications of the "do nothing" approach to amending these regulations might be for the City. While not an exact science, the system of build-out analysis provides rough estimates of the future development patterns and its impact on City revenues and expenses.

The build out identifies the undeveloped and under-developed land within the City limits that is not subject to significant development constraints. These lands are then evaluated to determine the maximum development potential of these properties under the current zoning. Because one of the goals of a build-out exercise is to calculate the maximum potential impact on municipal services and finances, it is generally assumed that development will be residential in nature to the maximum extent permitted by zoning in a particular area. While it is possible that much of this may be commercial development, we assume residential development because of its more limited impact on revenues and its more significant additional strain on City services.

The results of the build-out analysis are then used to calculate the potential added demand that may be placed on municipal services, schools, and finances. From these studies, a clearer understanding emerges of where the City might be headed if its current land use policies remain unchanged. This vision can be compared to the community's vision developed through the planning process and appropriate recommendations can be made for policy and regulatory changes that might move the City closer to the desired vision. A more quantitative fiscal analysis can also be conducted comparing the net municipal cost of the build out scenario to the potential tax revenues that might be gained from the added development and the anticipated municipal expenditures that will accompany the Master Plan's implementation.

2.10.1 METHODOLOGY

In order to determine a maximum build-out scenario under the current zoning for a substantially built-out community like Lowell, a non-traditional strategy must be considered. A traditional build-out analysis will focus on identifying vacant, undeveloped, and significantly under-developed individual parcels; calculate the total area "available for development;" introduce a locally-appropriate multiplier to eliminate wetlands, access ways, topography and other development constraints; and multiply what remains by the number of housing units the zoning permits. While this sort of analysis is likely to pick up some sites that would never be developed, it would also likely miss some sites, therefore providing a roughly accurate picture of overall development patterns under existing zoning.

For Lowell, this methodology would identify a handful of parcels and suggest that the City is basically built-out. Unfortunately, it would be unable to find or recognize the true potential impact of the projects typically seen today where a number of contiguous parcels that would not individually yield any new building lots are combined and resubdivided to create a significant number of new housing units. To better address the potential impact of these types of developments, as well as more straightforward development opportunities, the following methodology has been employed.

Using Lowell's Geographic Information System (GIS) software, all locations in the City where approximately one acre or more of contiguous unbuilt land exists were identified, eliminating building footprints, wetlands, parks, open space, rights-of-way, active railroad lines, extreme grades, areas of documented significant environmental contamination, and utility easements. These sites were then evaluated to determine the maximum potential number of lots and housing units that might be created from the parcel under the current zoning regulations.

The number of new units to be created through the rehab of currently vacant buildings in the Acre and Jackson/Appleton/Middlesex Urban Renewal Areas and the Lawrence Mills Redevelopment Plan have been estimated and added to the totals.

All vacant parcels in the Assessor's records that are larger than 6,000 square feet (the minimum lot area in the most permissive residential zone) have been identified. Those parcels that have been addressed by exercise one above have been eliminated. Each remaining parcel was then reviewed to determine the number of potential lots and housing units that might be created under the current zoning regulations.

Many large residential parcels may be divided by-right to create an additional building lot through the ANR (Approval Not Required) process in the state zoning legislation. All residential parcels greater than 15,000 square feet that might be divided through this process have also been identified using assessing records. Lots under 15,000 square feet are not likely to be divided into more than one buildable lot through the ANR process. Using the 15,000 square foot threshold will provide the most accurate estimate of the number of remaining ANR lots that could be created in Lowell. Those parcels that are addressed in either of the above exercises were eliminated. These parcels were then reviewed individually to determine how many additional building lots and housing units that might be created under the current zoning regulations.

2.10.2 CONCLUSIONS

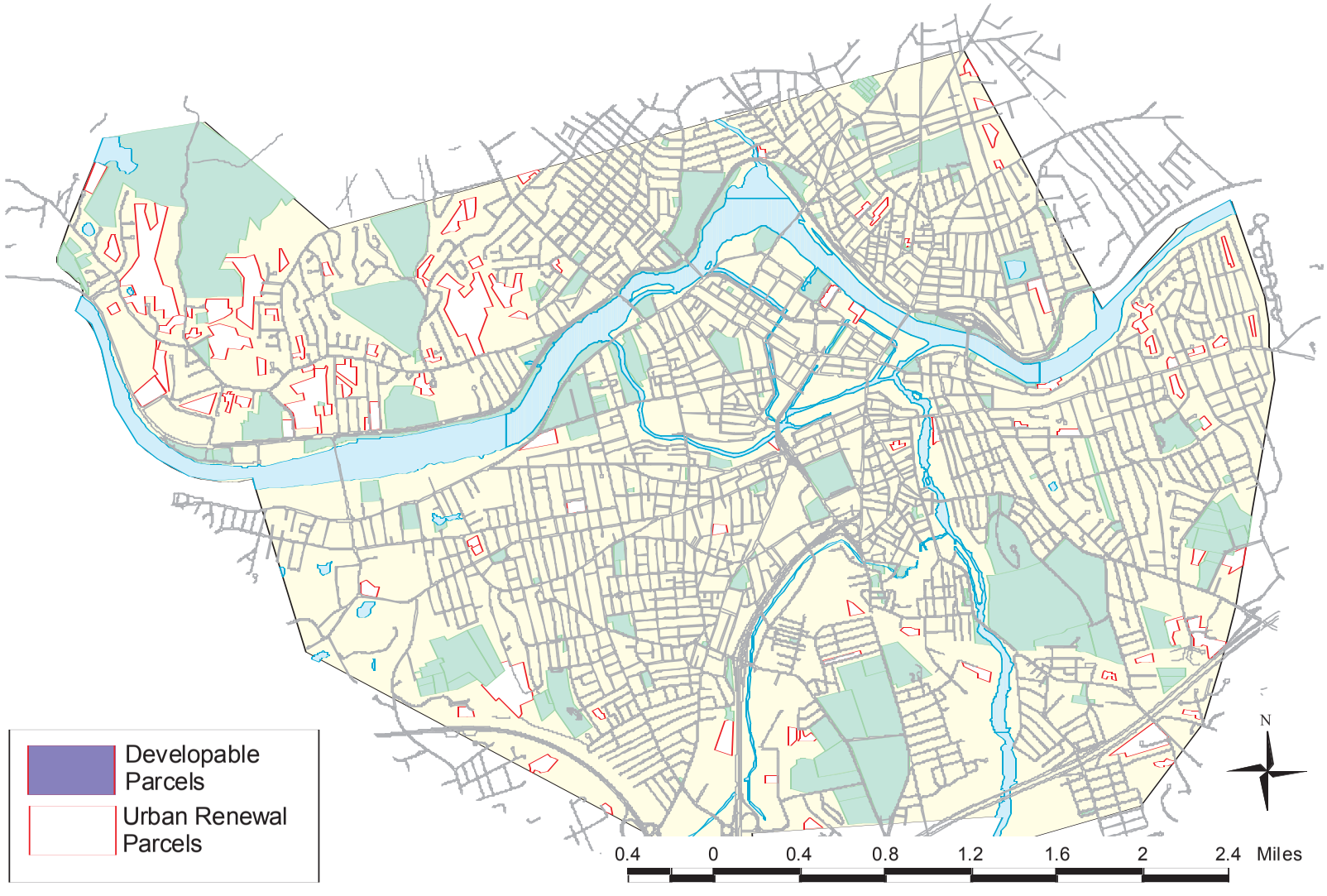
The build-out study identified 372 acres of land remaining in Lowell that could potentially be subdivided or otherwise developed with a significant number of additional dwelling units. If this acreage were developed to its maximum capacity under the current zoning, it would result in the construction of 2,909 additional dwelling units for 6,342 new residents. Approximately one third of this land is located in the western portion of the Pawtucketville neighborhood. The study also identified 459 individual lots that could be created from either buildable vacant lots or large residential parcels that could be subdivided through the ANR process to yield an additional building lot. These parcels would account for a maximum of 1,414 additional dwelling units and 3,083 additional residents scattered relatively evenly throughout the City.

The results of these exercises have been summarized in the attached tables and maps. Impact calculations are based on multipliers supplied by the Commonwealth's Executive Office or Environmental Affairs, City of Lowell Department of Public Works, and the ITE Trip Generation Manual. The following multipliers were used in the calculations:

- 2.18 additional residents per new dwelling unit
- 75 gallons of water consumption/day for each additional resident
- 9.0 new vehicle trips/day for each additional dwelling unit
- 1.17 tons of solid waste/year per dwelling unit (62 percent of total waste)
- 0.72 tons of recyclable waste/year per dwelling unit (38 percent of total waste, current City recycling levels are closer to 15 percent)

2.10.3 PLANNED BUILD-OUT

While the City can absorb and will likely benefit from the build-out scenario population growth projected under current regulations, this growth but should be re-focused to appropriate and desirable locations and target populations. This plan proposes to reorient this growth to minimize its impact on established neighborhoods, municipal utilities, the environment, and transportation infrastructures while maximizing its potential economic and tax benefits for the City.



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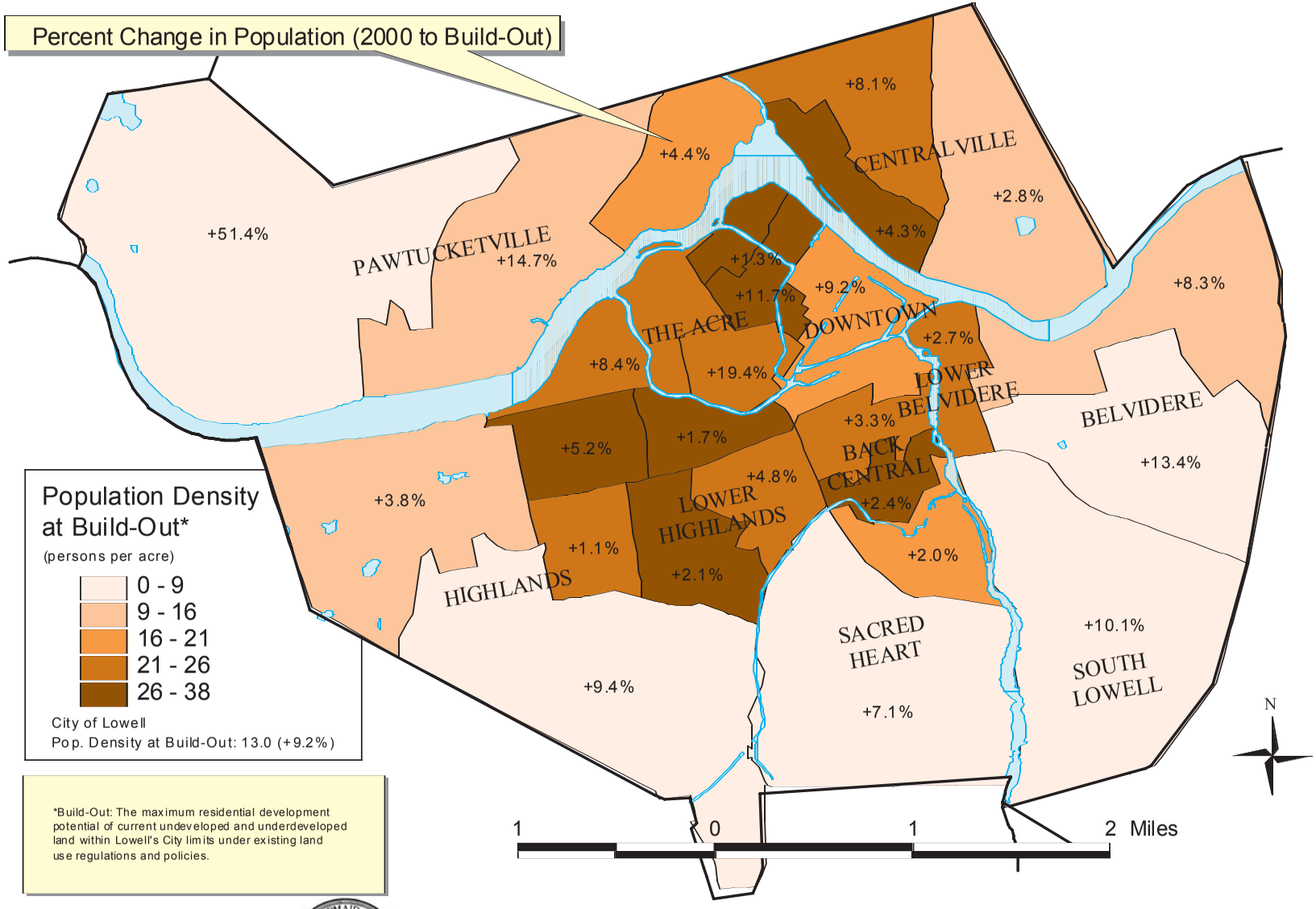
Large Parcels for Subdivisions or Multi-Family Developments

LOWELL COMPREHENSIVE PLAN

December 2001



Population Density at Build-Out

LOWELL COMPREHENSIVE PLAN

May 2003

Table 2-7
Build-Out Summary – Total

TRACT	Neighborhood	2000 Population	Potential Building Lots	Potential Dwelling Units	Additional Residents	Population at Build-Out	Additional Water Demand (Gal./Day)	Add'l Non-Recyclable Solid Waste (Tons/Yr.)	Additional Recyclable Solid Waste (Tons/Yr.)	Additional Vehicle Trips/Day
3101	Downtown	3,881	28	164	358	4,239	26,814	192	118	1,476
3102	Christian Hill	6,070	76	79	172	6,242	12,917	92	57	711
3103	Centralville	6,157	49	229	499	6,656	37,442	268	165	2,061
3104	Centralville	3,581	16	71	155	3,736	11,609	83	51	639
3105	Pawtucketville	3,353	23	68	148	3,501	11,118	80	49	612
3106.01	Pawtucketville	5,392	572	1271	2,771	8,163	207,809	1,487	915	11,439
3106.02	Pawtucketville	5,610	186	379	826	6,436	61,967	443	273	3,411
3107	Acre	4,575	41	177	386	4,961	28,940	207	127	1,593
3108	Acre	2,457	2	14	31	2,488	2,289	16	10	126
3110	Acre	2,754	2	148	323	3,077	24,198	173	107	1,332
3111	Acre	2,286	2	203	443	2,729	33,191	238	146	1,827
3112	L. Highlands	3,374	13	27	59	3,433	4,415	32	19	243
3113	Highlands	3,954	25	95	207	4,161	15,533	111	68	855
3114	Highlands	5,857	49	101	220	6,077	16,514	118	73	909
3115	Highlands	2,908	7	15	33	2,941	2,453	18	11	135
3116	Highlands	5,099	199	220	480	5,579	35,970	257	158	1,980
3117	L. Highlands	4,923	12	48	105	5,028	7,848	56	35	432
3118	L. Highlands	3,516	16	78	170	3,686	12,753	91	56	702
3119	Back Central	2,666	8	41	89	2,755	6,704	48	30	369
3120	Back Central	2,977	7	33	72	3,049	5,396	39	24	297
3121	Sacred Heart	3,112	17	28	61	3,173	4,578	33	20	252
3122	Sacred Heart	4,741	102	155	338	5,079	25,343	181	112	1,395
3123	South Lowell	5,023	178	232	506	5,529	37,932	271	167	2,088
3124	L. Belvidere	2,405	15	30	65	2,470	4,905	35	22	270
3125.01	Belvidere	4,497	81	172	375	4,872	28,122	201	124	1,548
3125.02	Belvidere	3,999	60	245	534	4,533	40,058	287	176	2,205
	City of Lowell	**105,167**	**1,786**	**4,323**	**9,424**	**114,591**	**706,811**	**5,058**	**3,113**	**38,907**

Source: City of Lowell Division of Planning and Development, December 2001

2.11 Analysis of Development Impacts

One of the key considerations when establishing a plan to guide continued development is the issue of the fiscal impact of this development on municipal finances. A key question is whether or not this new development will generate more tax revenues than the costs of the municipal services it demands. Second, planners must also ask, will this development affect the community in other ways that make it potentially beneficial in spite of a net negative fiscal impact or will this development burden the community in other ways that are undesirable in spite of a net positive fiscal impact. Tax-exempt institutions like Lowell General Hospital or quasi-public facilities like the Tsongas Arena are examples of the former, while the proposed trash transfer station that was ultimately not built in Lowell's Sacred Heart neighborhood might have been an example of the latter.

To assist in the process of estimating potential fiscal impacts of new development, the Commonwealth of Massachusetts' Executive Office of Environmental Affairs (EOEA) prepared a fiscal impact tool, which can be used to estimate the potential tax revenues and municipal costs (including education, public safety, and infrastructure construction and maintenance) that may be realized from proposed development projects. This tool also provides estimates of potential state aid that might result from the new development.

Most institutional development is exempt from local property tax, and is therefore almost always a net negative fiscal impact for a municipality. Most commercial or industrial development generates substantial property tax revenue, especially in a community like Lowell with a two-tiered tax rate that favors residential property, and demands little education outlay, typically the most significant expense for a municipality, and is therefore almost always a net positive fiscal impact for a City. The impacts of these projects must be considered in terms of non-monetary factors as discussed above, so sample analyses have not been prepared for these types of uses.

However, the fiscal impact of residential development varies tremendously depending on the ages and household characteristics of the residents and the market values of the proposed project. For Lowell, state aid also plays a significant role in evaluating fiscal impacts of development, and local aid formulas are also dependent on the income levels and demographics of the proposed development. The following table illustrates the estimated fiscal impacts of different types of residential development that are typical of recent development in the City as generated by the EOEA's fiscal impact tool, using current funding formulas, average per capita or per household municipal expenses for services, 2002 market values, and fiscal year 2002 property tax rates.

Two conclusions are important. First, the fiscal impact of residential development is almost always positive or even for the City of Lowell, but it is heavily dependent on state aid to reach these levels. Proposed cuts to local aid that are presently being discussed by the Governor and Legislative leaders would be highly detrimental to the development impacts of family housing in Lowell. Secondly, the impact varies dramatically depending primarily on the estimated number of school children to be housed in a particular development. Lowell should therefore work to insure that local aid formulas are not severely reduced and to maintain a level of income diversity that allows the City to continue to receive consistent funding in this area. Lowell should also seek to balance its overall population with older, younger, and non-traditional households that are less likely to have children, as well as the families with children that now constitute the majority of the City's residents.

Table 2-8
Fiscal Impact of Residential Developments in Lowell

Scenario	Assumption		Estimated Annual Fiscal Impacts						
	Average Household Size	Average Market Value/ Dwelling Unit	Education Expenses	Municipal Expenses	Property Tax Revenue	Local Fees & Other Revenue	FY03 State	Net Fiscal Impact	Fiscal Impact with 10-15% Local Aid Cut
10-lot subdivision of 3-bedroom single-family homes in Pawtucketville	3.3 (avg.)	$300,000	($60-70,000)	($45-50,000)	$42,000	$3-7,000	$70-80,000	$5-10,000	EVEN
10-lot subdivision of 3-bedroom single-family homes in Pawtucketville	2.8 (census)	$300,000	($60-70,000)	($35-45,000)	$42,000	$3-5,000	$70-80,000	$10-15,000	$2-6,000
50-unit high-rise condominium on Pawtucket Boulevard with 2-bedroom units	1.0 (avg.)	$250,000	($15-20,000)	($65-75,000)	$175,000	$5-10,000	$30-35,000	$120-130,000	$115-125,000
50-unit high-rise condominium on Pawtucket Boulevard with 2-bedroom units	1.5 (census)	$250,000	($15-20,000)	($105-115,000)	$175,000	$8-12,000	$35-45,000	$95-100,000	$85-95,000
Five 2-family homes in South Lowell, each containing one 3-bedroom and one 2-bedroom unit	2.8 (avg.)	$200,000 (3) $170,000 (2)	($70-80,000)	($35-45,000)	$26,250	$3-5,000	$80-85,000	EVEN	($5-10,000)
Five 2-family homes in South Lowell, each containing one 3-bedroom and one 2-bedroom unit	2.6 (census)	$200,000 (3) $170,000 (2)	($50-60,000)	($30-40,000)	$26,250	$3-5,000	$60-70,000	$2-6,000	($2-6,000)
10 townhouse-style condominium 2-bedroom units in the Lower Highlands	2.1 (avg.)	$160,000	($5-10,000)	($25-35,000)	$22,400	$2-4,000	$10-20,000	$2-6,000	EVEN
10 townhouse-style condominium 2-bedroom units in the Lower Highlands	3.0 (census)	$160,000	($75-85,000)	($40-45,000)	$22,400	$3-5,000	$85-95,000	($2-6,000)	($10-15,000)
A 10-unit building in the Acre including 1,2, & 3-bedroom affordable apartments	2.0 (avg.)	$120,000	($25-35,000)	($25-30,000)	$16,800	$2-4,000	$35-45,000	EVEN	($2-6,000)
A 10-unit building in the Acre including 1,2, & 3-bedroom affordable apartments	3.0 (census)	$120,000	($110-120,000)	($40-45,000)	$16,800	$3-5,000	$120-130,000	($10-15,000)	($20-30,000)

* Note: all fiscal impact estimates are calculated using formulas and tools supplied by the Commonwealth of Massachusetts, EOEA. Scenarios do not assume any municipal capital construction of new schools, fire stations, etc. Average household sizes are based on state averages for this type of development and the Census 2000 data for the area of Lowell where the scenario development is located.

** Residential property tax rate of $13.66 is applicable to all scenarios listed above.

Source: City of Lowell DPD, Commonwealth of Massachusetts EOEA